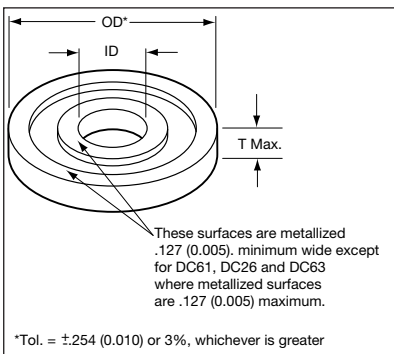
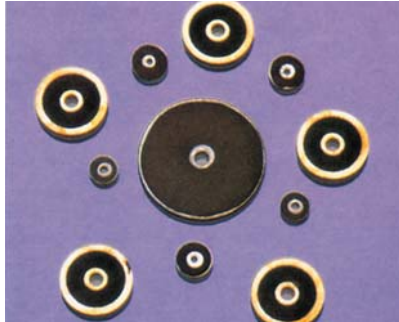


Discoidal MLC Feed-Through Capacitors and Filters

DC Style (US Preferred Sizes)

APPLICATION INFORMATION ON DISCOIDAL



LOWEST CAPACITANCE IMPEDANCES TO GROUND

A discoidal MLC capacitor has very low impedance associated with its ground path since the signal is presented with a multi-directional path. These electrode paths, which can be as many as 100, allow for low ESR and ESL which are the major elements in impedance at high frequencies.

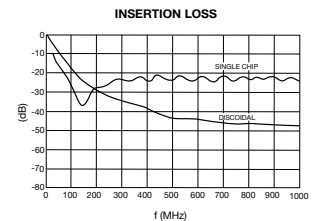
The assembled discoidal element or feed-thru allows signal to be fed in through a chassis or bulkhead, conditioned as it passes through the discoidal, and isolated by the chassis and discoidal from the original signal. An example of this application would be in an AFT circuit where the AC noise signal would be required to be stripped from the DC control signal. Other applications include single line EMI/RFI suppression, L-C filter construction, and coaxial shield bypass filtering.

The shape of the discoidal lends itself to filter construction. The short length allows compact construction where L-C construction is desired. The size freedom associated with this element allows almost any inside/outside diameter combination. By allowing the inside diameter to equal the center insulator diameter of a coaxial signal line and special termination techniques, this device will allow bypass filtering of a floating shield to ground.

* Discoidal capacitors are available in two (2) temperature coefficients (COG, X7R) and a variety of shapes and sizes, the most standard of which appear on pages 138 and 139.

* Custom designed capacitor arrays are available in an unlimited number of configuration with a wide range of rating voltages (50-2000) and temperature coefficients (NPO, BX, BR, X7R) please see page 138. For additional information please contact AVX.

AVX's DC Series 50V, 100V, 200V, COG and X7R parts are capable of meeting the requirements of MIL-PRF-31033.



ELECTRICAL SPECIFICATIONS

Temperature Coefficient

COG: A Temperature Coefficient - 0 ± 30 ppm/°C, -55° +125°C
 X7R: C Temperature Coefficient - $\pm 15\%$, -55° to +125°C

Capacitance Test (MIL-STD-202 Method 305)

COG: 25°C, 1.0 ± 0.2 Vrms at 1KHz, for ≤ 100 pF use 1 MHz
 X7R: 25°C, 1.0 ± 0.2 Vrms at 1KHz

Dissipation Factor 25°C

COG: 0.15% Max @ 25°C, 1.0 ± 0.2 Vrms at 1KHz, for ≤ 100 pF use 1 MHz
 X7R: 2.5% Max @ 25°C, 1.0 ± 0.2 Vrms at 1KHz

Insulation Resistance 25°C (MIL-STD-202 Method 302)

COG and X7R: 100K MΩ or 1000 MΩ-μF, whichever is less.

Insulation Resistance 125°C (MIL-STD-202 Method 302)

COG and X7R: 10K MΩ or 100 MΩ-μF, whichever is less.

Dielectric Withstanding Voltage 25°C (Flash Test)*

COG and X7R: 250% rated voltage for 5 seconds with 50 mA max charging current. 500V rated units will be tested at 750 VDC

Life Test (1000 hrs)

COG and X7R: 200% rated voltage at +125°C (500 Volt units @ 600 VDC)

Moisture Resistance (MIL-STD-202 Method 106)

COG, X7R: Ten cycles with no voltage applied.

Thermal Shock (MIL-STD-202 Method 107, Condition A)

Immersion Cycling (MIL-STD-202 Method 104, Condition B)

HOW TO ORDER

Not RoHS Compliant

DC61	5	A	561	K	A	5	1	06
AVX Style See Pages 138-139	Voltage 50V = 5 100V = 1 200V = 2 500V = 7	Temperature Coefficient COG = A X7R = C	Capacitance Code (2 significant digits + no. of zeros) Examples: 10 pF = 100 100 pF = 101 1,000 pF = 102 22,000 pF = 223 220,000 pF = 224	Capacitance Tolerance COG: J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$ X7R: K = $\pm 10\%$ M = $\pm 20\%$	Test Level A = Standard	Termination 5 = Silver (AVX Standard) A = Unterminated 7 = Ti/W/Ni w/Au Sputter (100μ inches)	Inside Diameter See Pages 122-123	Maximum Thickness 02 = 0.508 (0.020) 03 = 0.762 (0.030) 04 = 1.016 (0.040) 05 = 1.270 (0.050) 06 = 1.524 (0.060) 07 = 1.778 (0.070) 08 = 2.032 (0.080) 09 = 2.286 (0.090) 10 = 2.540 (0.100) 11 = 2.794 (0.110) 12 = 3.048 (0.120) 13 = 3.302 (0.130)

For dimensions, voltages or values not specified, please consult factory.

Discoidal MLC Feed-Through Capacitors and Filters

DC Style

SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: millimeters (inches)

EIA Characteristic	C0G																
	DC50	DC08	DC61	DC26	DC63	DC04	DC65	DC66	DC67	DC69	DC32	DC70	DC02	DC71	DC05	DC73	DC72
AVX Style	DC50	DC08	DC61	DC26	DC63	DC04	DC65	DC66	DC67	DC69	DC32	DC70	DC02	DC71	DC05	DC73	DC72
Outside Diameter (OD)*	1.27 (0.050)	2.03 (0.080)	2.54 (0.100)	3.43 (0.135)	3.81 (0.150)	4.83 (0.190)	5.33 (0.210)	5.97 (0.235)	6.73 (0.265)	8.13 (0.320)	8.51 (0.335)	8.89 (0.350)	9.40 (0.370)	9.78 (0.385)	12.70 (0.500)	15.24 (0.600)	16.26 (0.640)
Thickness Maximum (T)	1.02 (0.040)	1.02 (0.040)	1.52 (0.060)	1.52 (0.060)	1.52 (0.060)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)
Inside Diameter No. (ID)	1	1,2	1,2	1,2,3	1,2,3,4	1,2,3	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4
Termination	Sputter	All															
Voltage	50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50
cap. in pF	10 12 15																
	18 22 27																
	33 39 47																
	56 68 82																
	100 120 150																
	180 220 270																
	330 390 470																
	560 680 820																
	1000 1200 1500																
	1800 2200 2700																
	3300 3900 4700																
	5600 6800 8200																
	10,000 12,000 15,000																
	18,000 22,000 27,000																
	33,000 39,000 47,000																
	56,000 68,000 82,000																
	100,000 120,000 150,000																
	180,000 220,000 270,000																
	330,000 390,000 470,000																
	560,000 680,000																

DC50 termination can only be sputter Au

*Outside Diameter:
Tolerance is ±0.254 (0.010) or 3%
whichever is greater

$$1 = .635^{+.127}_{-.051} (.025^{+.005}_{-.002})$$

$$2 = .762^{+.127}_{-.051} (.030^{+.005}_{-.002})$$

Inside Diameter:

$$3 = .914^{+.127}_{-.051} (.036^{+.005}_{-.002})$$

$$4 = 1.07^{+.127}_{-.051} (.042^{+.005}_{-.002})$$

$$5 = 1.27^{+.127} (0.050^{+.005})$$

$$6 = 1.52^{+.127} (0.060^{+.005})$$

$$7 = 1.73^{+.127} (0.068^{+.005})$$



Discoidal MLC Feed-Through Capacitors and Filters

DC Style

SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: millimeters (inches)

EIA Characteristic	X7R																
AVX Style	DC50	DC08	DC61	DC26	DC63	DC04	DC65	DC66	DC67	DC69	DC32	DC70	DC02	DC71	DC05	DC73	DC72
Outside Diameter (OD)*	1.27 (0.050)	2.03 (0.080)	2.54 (0.100)	3.43 (0.135)	3.81 (0.150)	4.83 (0.190)	5.33 (0.210)	5.97 (0.235)	6.73 (0.265)	8.13 (0.320)	8.51 (0.335)	8.89 (0.350)	9.40 (0.370)	9.78 (0.385)	12.70 (0.500)	15.24 (0.600)	16.26 (0.640)
Thickness Maximum (T)	1.02 (0.040)	1.02 (0.040)	1.52 (0.060)	1.52 (0.060)	1.52 (0.060)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)	2.54 (0.100)
Inside Diameter No. (ID)	1	1,2	1,2	1,2,3	1,2,3,4	1,2,3	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4	5,6,7 1,2,3,4
Termination	Sputter	All															
Voltage	50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50	500 200 100 50
cap. in pF	56 68 82																
	100 120 150																
	180 220 270																
	330 390 470																
	560 680 820																
	1000 1200 1500																
	1800 2200 2700																
	3300 3900 4700																
	5600 6800 8200																
	10,000 12,000 15,000																
	18,000 22,000 27,000																
	33,000 39,000 47,000																
	56,000 68,000 82,000																
	100,000 120,000 150,000																
	180,000 220,000 270,000																
	330,000 390,000 470,000																
	560,000 680,000 820,000																
	1.0 µF 1.2 µF 1.5 µF																
	1.8 µF 2.2 µF 2.7 µF																
	3.3 µF 3.9 µF 6.8 µF																

DC50 termination can only be sputter Au

*Outside Diameter:
Tolerance is ±0.254 (0.010) or 3%
whichever is greater

Inside Diameter:		
1 = .635 ^{+0.127} _{-.051} (.025 ^{+0.005} _{-.002})	3 = .914 ^{+0.127} _{-.051} (.036 ^{+0.005} _{-.002})	5 = 1.27±.127 (0.050±.005)
2 = .762 ^{+0.127} _{-.051} (.030 ^{+0.005} _{-.002})	4 = 1.07 ^{+0.127} _{-.051} (.042 ^{+0.005} _{-.002})	6 = 1.52±.127 (0.060±.005)
		7 = 1.73±.127 (0.068±.005)

